

## **ABSTRACT**

Methods of forming a gas dielectric structure for a semiconductor structure by using a sacrificial layer. In particular, one embodiment of the invention includes forming an opening for semiconductor structure in a dielectric layer on a substrate; depositing a sacrificial layer over the opening; performing a directional etch on the sacrificial layer to form a sacrificial layer sidewall on the opening; depositing a conductive liner over the opening; depositing a metal in the opening; planarizing the metal and the conductive liner; removing the sacrificial layer sidewall to form a void; and depositing a cap layer over the void to form the gas dielectric structure. The invention is easily implemented in damascene wire formation processes, and improves structural stability.